



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

PATENT

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TC 1700

In re application of:

Shi-Sheng Wang

Serial No: 09/921,342

Filed: August 2, 2001

Title: HIGH CONTRAST, MOISTURE RESISTANT)
ANTISTATIC/ANTIREFLECTIVE COATING)
FOR CRT DISPLAY SCREEN

Attorney's Docket No.: 57

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Confirmation No: 6021

Group Art: 1755

Examiner: David M. Brunzman

CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail before the last scheduled pickup, postage prepaid, in an envelope addressed to, MAIL STOP NON-FEE AMENDMENT, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on January 23, 2004.


DIANA W. STRONG

DECLARATION OF CHUN-MIN HU UNDER 37 C.F.R. 132

Sir:

I, Chun-Min Hu, declare and say that:

1. I am a supervisory chemist in the employment of Chunghwa Pictures Tubes, Ltd. (CPT) of Yangmei/Taoyuan, Taiwan/Republic of China. I have been employed as a chemist at CPT for approximately fifteen (15) years.
2. As a chemist at CPT, my work includes the design and development of optical coatings for use on the surface of a display screen of a cathode ray tube (CRT) which is the subject matter of the subject patent application.
3. The named inventor, Shi-Sheng Wang, of the subject patent application worked at CPT under

my supervision on the high contrast, moisture resistant antistatic/antireflective coating for a CRT display screen disclosed and claimed in the subject patent application.

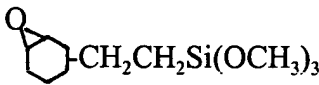
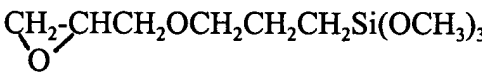
4. As Mr. Wang's supervisor at CPT during his work on this high contrast, moisture resistant antistatic/antireflective coating for a CRT display screen, I was familiar with Mr. Wang's work on this project including the composition, development and use of this coating. Mr. Wang no longer is employed at CPT. I recently attempted to contact Mr. Wang to discuss with him the subject patent application, but I have been unsuccessful in my attempts to communicate with him.
5. This coating disclosed and claimed in the subject patent application is disposed in an antireflective layer, or combination antireflective and antistatic layer, applied to the outer surface of the glass display screen, or faceplate, of a CRT. The antireflective layer also includes an organic dye for increasing color purity and contrast of a video image presented on the glass faceplate. The coating further includes a first binding agent for bonding to the organic dye in the antireflective layer and preventing diffusion of the dye out of the antireflective layer. The inventive coating also includes a second binding agent disposed in and bonded to the antireflective layer for providing the antireflective layer with increased water resistance for preventing washing out of the dye from the antireflective layer. The first and second binding agents are silane binding agents which are common chemicals characterized as having a straight-chain, saturated paraffin hydrocarbon composition. See Exhibit A.

6. The first silane binding agent has the following structure:



where "f" is a special function group which reacts with the organic dye within the silica liquid forming the antireflective coating.

7. Examples of the first silane binding agent which could be used in this invention for binding to the organic dye in the antireflective layer are listed in a product brochure and two (2) pages downloaded from the website of Shin-Etsu Chemical Company of Japan, a copy of which is attached hereto as Exhibit B, and include:

A-1100	gamma-Aminopropyl-trimethoxysilane	$\text{H}_2\text{NCH}_2\text{CH}_2\text{CH}_2\text{Si(OC}_2\text{H}_5)_3$
A-1120	N-beta-(aminoethyl)-gamma-aminopropyl-trimethoxysilane	$\text{H}_2\text{NCH}_2\text{CH}_2\text{NHCH}_2\text{CH}_2\text{CH}_2\text{Si(OCH}_3)_3$
A-186	beta-(3,4-Epoxy-cyclohexyl)ethyl-trimethoxysilane	
A-187	gamma-Glycidoxy-propyltrimethoxysilane	

8. The special function "f" group for each of these silane binding agents is as follows:

A-1100	gamma-Aminopropyl
A-1120	N-beta-(aminoethyl)-gamma-aminopropyl
A-186	beta-(3,4-Epoxy-cyclohexyl)
A-187	gamma-Glycidoxy

9. The second silane binding agent functions as a hydrophobic agent to prevent moisture from

permeating into the antireflective layer on the surface of the CRT's glass faceplate. The second silane coupling agent has the following composition:

hydrophobic group-organic structure-Si(OCH₃)₃,

where the hydrophobic group prevents permeation of moisture into the antireflective layer.

10. A silane coupling agent incorporating a hydrophobic group for preventing permeation of moisture into a layer such as an antireflective layer on the outer surface of a CRT's glass faceplate is also available from Shin-Etsu Chemical Company as shown in Exhibit B and has the following designation and composition:

KBM-7103 3,3,3-Trifluoropropyl trimethoxysilane $\text{CF}_3\text{-CH}_2\text{-CH}_2\text{-Si(OCH}_3\text{)}_3$

11. The hydrophobic group of this second silane coupling agent prevents permeation of moisture into the antireflective layer and has the composition:

3,3,3-Trifluoropropyl

12. The Shin-Etsu chemicals discussed above are readily available to the public for purchase and use and their compositions, properties and characteristics are known, or can be easily determined, by those skilled in the chemical arts. The Exhibit B Shin-Etsu product brochure and web pages are publicly available and widely distributed by Shin-Etsu Chemical Company.

I declare further that all statements made in this Declaration of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under §1001 of Title 18 of United States Code and that

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such willful false statements may jeopardize the validity of this application or any patent issued thereon.

Date: 2003. 12. 18

Chun - Min Hu
Chun-Min Hu